WHAT IS CLAIMED IS:

1. A method of operating an imaging system having a main coil and a shield coil electromagnetically coupled to the main coil, said method comprising:

monitoring for an external environmental fluctuation of electromagnetism; and

controlling current flow though the main and shield coils based upon said monitoring using a quench heater.

2. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using a plurality of coils wired in serial to each other and in parallel to the main and shield coils.

3. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using a coil wired in parallel to the main and shield coils, and an electronically activated sensor.

4. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using a coil wired in parallel to the main and shield coils, and a mechanically activated sensor.

5. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using a single coil wired in parallel to at least one of the main coil and the shield coil.

6. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using a single coil wired in parallel only one of the main coil and the shield coil.

7. A method in accordance with Claim 1 wherein said monitoring comprises monitoring for an external environmental fluctuation of electromagnetism using two coils wired in parallel, wherein the main coil and the shield coil are wired non-serially and the two

coils have a turn number ratio in accordance with I_m/I_s, where I_m is the current though the main coil, and I_s is the current though the shield coil.

8. A magnet system comprising:

at least one main coil; and

at least one environmental fluctuation circuit operationally coupled to said at least one main coil, said circuit comprising:

at least one detection coil; and

a quench heater positioned proximate said detection coil.

9. A system in accordance with Claim 8 further comprising a shield coil positioned to shield an electromagnetic field generated by said main coil, wherein said at least one environmental fluctuation circuit comprises a first environmental fluctuation circuit operationally coupled to said main coil, and a second environmental fluctuation circuit operationally coupled to said shield coil.

10. A system in accordance with Claim 9 wherein said main coil and said shield coil are wired non-serially, and said first environmental fluctuation circuit and said second environmental fluctuation circuit have a turn number ratio in accordance with I_m/I_s, where I_m is the current though said main coil, and I_s is the current though said shield coil.

11. A system in accordance with Claim 9 wherein said main coil and said shield coil wired in series, and said first environmental fluctuation circuit and said second environmental fluctuation circuit wired in serial to each other and in parallel to said main and shield coils.

12. A system in accordance with Claim 8, wherein said environmental fluctuation circuit further comprises an electronically activated sensor positioned to sense current though said detection coil.

13. A system in accordance with Claim 8, wherein said environmental fluctuation circuit further comprises a mechanically activated sensor configured to sense current though said detection coil.

14. A system in accordance with Claim 13, wherein said mechanically activated sensor comprises a solenoid and at least one first piston at least partially positioned within a bore of said solenoid.

15. A system in accordance with Claim 14 further comprising a second piston at least partially positioned in said bore opposite said first piston such that sufficient current flow through said solenoid in any direction will cause one of said first and second pistons to close a circuit to said quench heater.

16. A system in accordance with Claim 8 wherein said at least one environmental fluctuation circuit operationally coupled to said at least one main coil at an edge of said at least one main coil.

17. A system in accordance with Claim 8 wherein said at least one environmental fluctuation circuit operationally coupled to said at least one main coil at a point within said at least one main coil.

18. A method of operating an imaging system comprising a main coil, a shield coil positioned to shield an electromagnetic filed generated by the main coil, and at least one environmental fluctuation circuit operationally coupled to at least one of the main coil and the shield coil, the circuit comprising at least one detection coil, and a quench heater positioned proximate the detection coil, said method comprising:

energizing the quench heater such that the detection coil is in a non-superconductive state;

supplying current to the main coil and the shield coil until a predetermined current is reached while the detection coil is in the non-superconductive state;

activating a persistence switch to a superconductive state; and

deenergize the quench heater when the persistence is in the superconductive state.

19. A method in accordance with Claim 18 further comprising:

monitoring the current flow though the detection coil for a current above a predetermined threshold; and

energizing the quench heater when the current flow though the detection coil is above the threshold.

20. A method in accordance with Claim 19 further comprising:

monitoring the current flow through the detection coil for a zero current; and

de-energizing the quench heater when the current flow though the detection coil is zero.

21. A method in accordance with Claim 18, wherein the imaging system comprises two environmental fluctuation circuits in series to each other and in parallel to the main coil and the shield coil, said method further comprising energizing both quench heaters such that both detection coils are in non-superconductive states.

22. A method in accordance with Claim 21 further comprising:

monitoring the current flow though both detections coil for a current above a predetermined threshold; and

energizing both quench heaters when the current flow though one of the two detection coils is above the threshold.